915U-2 Wireless Mesh Networking I/O & Gateway

Long Range, Scalable and Highly Resilient Multi I/O Node and Gateway

Description

The ELPRO 915U-2 Wireless Mesh Networking I/O and Gateway is a multiple I/O node that extends communications to sensors and actuators in local, remote, or difficult to reach locations. Designed with a long range, license-free 900MHz wireless transceiver, the ELPRO 915U-2 is capable of providing IP-based mesh networking across sprawling industrial environments typical of industrial applications.

Capable of ad-hoc mesh networking, roaming and discovery, as well as deterministic mesh, the 915U-2 can serve as an end node, routing node or network gateway. Scalable to thousands of nodes, Gather-Scatter™ and Block Mapping technology offers the efficient utilization of network resources, and eases integration into complex monitoring and control systems. Integrated Modbus server capability allows further I/O expansion through the use of ELPRO 115S Expansion modules.

Features

- 902 – 928MHz Frequency up to 1W RF Power
- Frequency Hopping Spread Spectrum to 115kbps
- 50 x 250kHz Channels
- Self Healing IP-Based Wireless Mesh Networking
- Multi-Hop Repeater and Gateway Functionality
- Gather-Scatter™ and Block Mapping
- Serial Client/Server/Multicast Modbus TCP to RTU Gateway
- Configurable Digital, Pulse and Analog I/O to 14bit Resolution
- 10/100baseT IEEE 802.3 Ethernet
- Secure 128-bit AES Encryption
- Modbus RTU and TCP Support
- Over-The-Air Network Diagnostics and Configuration

Applications

- Oil and Gas Production and Distribution
- Pipeline Monitoring and Leak Detection
- Pharmaceutical Monitoring and Production
- Mining Operations Infrastructure
- Water Treatment Facilities
- Water & Wastewater Systems and Treatment Facilities

Specifications	
Transmitter/Receiver	
Frequency	902 – 928MHz(1)
Transmit Power	1mW (+0dBm) to 1W (+30dBm)
Transmission	Frequency Hopping Spread Spectrum (FHSS)
Modulation	Frequency Shift Keying (FSK)
Receive Sensitivity	-109dBm @ 19.2kbps (3% FER)
Channel Spacing	50 x 250KHz(2)
Data Rate	19.2 – 115.2kbps(1) "Auto Mode" selects fastest rate possible relative to RSSI
Range (LoS)	32Km (20 mi.) @ 1W(3)
Antenna Connector	1 x Female SMA Standard Polarity
Input/Output	
Discrete Input	8 Digital I/O (1 – 4 Configurable as PI or PO) On-State Voltage: <2.1Vdc Wetting Current: 5mA Max I/P Pulse Rate – DI 1/2: 50kHz, DI 3/4: 1kHz Max I/P Pulse Width - DI 1/2: 10uSec, PI 3/4: 0.2mSec
Discrete Output	8 Digital I/O (1 – 4 Configurable as PI or PO) On-State Voltage – DO Max: 30Vdc Wetting Current – DO Max: 200mA Max O/P Pulse Rate – PO Max Rate: 10kHz
Analog Inputs	4 AI (2 Differential, 2 Single Ended) Current Range: 0 – 24mA Current Resolution: 14 Bits Accuracy (Current): 0.1% Voltage Input Range: AI 1/2: 0 – 25V, AI 3/4: 0 – 5V Voltage Resolution: 14 Bits Accuracy (Voltage): 0.1%
Analog Output	2 AO (Sourcing) Current Range: 0 – 24mA Current Resolution: 13 Bits Accuracy (Current): 0.1%
Note: Specifications subject to change. 1) Country specific configuration 2) 18 New Zealand 3) Typical Maximum Line of Sight Range	
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Specifications	
Ethernet Port	
Ethernet Port	10/100baseT; RJ45 Connector – IEEE 802.3
Link Activity	Link, 100baseT via LED
Serial Port	
RS232	EIA-562 (RJ45 Connector)
RS485	2-Pin Terminal Block – Non-Isolated(4)
Data Rate (Bps)	1200, 2400, 4800, 9600, 14400, 19200, 38400, 57600, 76800, 115200, 230400bps
Serial Settings	7 / 8 Data Bits; Stop/Start/Parity (Configurable)
Protocols and Configuration	
System Address	ESSID; 1 – 31 Character Text String
Protocols Supported	TCP/IP, UDP, HTTP, FTP, TFTP, TELNET, MODBUS, MODBUS-TCP
User Configuration	All User Configurable Parameters via HTTPS
Configurable Parameters	Unit details, I/O mappings and parameters, radio settings, for more refer to user manual. Modbus TCP/ RTU Gateway Embedded Modbus Master/Slave for I/O transfer
Security	Data Encryption – 128bit AES. Secure HTTP Protocol
LED Indication/Diagnostics	
LED Indication	Power/OK; TX/RX; RS232; RS485; Digital I/O; Analog I/O status
Reported Diagnostics	RSSI Measurements (dBm), Connectivity Information/Statistics, System Log file
Network Management	Optional Network Management System
Compliance	
EMC	FCC Part 15; EN 301 489; AS 3548
RF (Radio)	FCC Part 15.247; AS 4268.2 ; RFS29 NZ
Hazardous Area	CSA Class I, Division 2; ATEX; IECEx Na IIC
Safety	IEC 60950 (RoHS Compliant)
UL	UL Listed
General	
Size	180 x 150 x 35 mm (5.91" x 7.09" x 1.38")
Housing	IP20 Rated High Density Thermoplastic
Mounting	DIN Rail
Terminal Blocks	Removable; Max conductor 12AWG (2.5 mm^2)
Temperature Rating	-40 to +60°C; -40 to +140°F
Humidity Rating	0 – 99% RH Non-condensing
Weight	0.5kg (1.1lb).
Power Supply	
Nominal Supply	15 to 30Vdc; Under/ Over Voltage Protection
Average Current Draw	220mA @ 12V (Idle), 110mA @ 24V (Idle)
Transmit Current Draw	500mA @ 12V (1W), 250mA @ 24V (1W)
Note: Specifications subject to change. 4) Maximum Distance 1200m (3937')	

Ordering

To order, select product code from the table and specify country of application.

Product Code	Description	Frequency	RF Power
915U-2	Wireless Mesh I/O	902-928MHz FSK	1W
Note: Available RF power and frequency may vary depending on country of application.			

Accessories

The following accessories can assist with compatibility when commissioning.

Product Code	Description	Data Sheet #
Interface		
915U-TCP	Modbus TCP/RTU Gateway	7923
915U-TCADP	TCP Adaptor (Type T Thermocouple)	7930
Antennas - 900MHz		
DG900	Whip Antenna - SMA Male, angle bracket, -2dB gain, 1m (3') coaxial cable	7942
WH900	Whip Antenna - SMA Male	7942
CFD890EL	Dipole Antenna - SMA Male, mounting bracket, 5m (16') Coaxial cable	7942
SG900EL	Collinear Antenna - N-type Female, 5dB gain	7942
SG900-6	Collinear Antenna - N-type Female, 8dB gain	7942
YU6-900	Yagi Antenna - N-type Female,10dB gain	7942
YU16-900	Yagi antenna - N-type Female, 15dB gain	7942
Cables		
CC3/10/20-SMA	Coaxial Cable Kit - 3m (9.8')/10m (32')/20m (65'), N-type to SMA	7932
CCTAIL-SMA-F/M	Coaxial Cable Tail - 600mm (24"), SMA to N-type Female or Male	7932
ETH-C5A	Ethernet Cable - 1.8m (6'), direct, RJ45 to RJ45	7932
SER-DB9	RS232 Serial Cable - DB9 Male to DB9 Female	7932
SER-RJ45	RS232 Serial Cable - DB9 Female to RJ45	7932
Surge Diverters		
CSD-SMA-2500	SMA Surge Diverter for use with CC10, CC20 - SMA	7936
CSD-N-6000	Coaxial Surge Diverter, Bulkhead N Female to N Female	7936
MA15/D/1/SI	Power Supply Surge Diverter, 110Vac/15A	7936
IOP32D	Signal Surge Diverter, 2 x 2-wire/1 x 4-wire	7936
Power Supplies		
PS-DINAC-12DC-OK	DIN Rail Power Supply, 100 - 250Vac, 12Vdc/2.5A	7935
PS-DINAC-24DC-OK	DIN Rail Power Supply, 100 - 250Vac, 24Vdc/2A	7935
Mounting Brackets		
BR-COL-KIT	Mounting Bracket Kit for Collinear Antenna	7933
BR-YAG-KIT	Mounting Bracket Kit for Yagi Antenna	7933

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